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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,041	08/18/2006	Satoshi Seo	0553-0508	4399
24628	7590	11/03/2011	EXAMINER	
Husch Blackwell LLP			JACKSON JR, JEROME	
Husch Blackwell Sanders LLP Welsh & Katz			ART UNIT	
120 S RIVERSIDE PLAZA			PAPER NUMBER	
22ND FLOOR			2815	
CHICAGO, IL 60606			MAIL DATE	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/590,041

## Applicant(s)

SEO ET AL.

## Examiner

JEROME JACKSON JR

## Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 5) ☒ Claim(s) 1 and 17-35 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 1 and 17-35 is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-850)  
Paper No(s)/Mail Date \_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/11/11 has been entered.

***Claim Rejections - 35 USC § 102***

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1 and 17-35 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kido '401, of record.

Applicant defines a "mixed layer" as: "It is to be noted that the mixed layer includes a layer in which an organic compound and an inorganic compound are mixed or a layer in which each of an organic compound and an inorganic compound are thinly formed."

Under this definition, applicant's claims do not distinguish over Kido disclosing a structure comprising a "mixed layer", e.g. the combination of "thinly formed" layers [3-n and 4-(n-1)] directly adjacent cathode electrode 5; and wherein additional layers e.g. 3-(n-1)/4-(n-2)...comprise "light emitting layers" between the cathode and anode electrode

layers. Applicant's broad definition of "mixed layer" does not distinguish the claims over Kido.

Claims 1 and 17-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kido in view of Tsutsui 2003/0218166.

Kido discloses a layered light emission device including quarter wavelength emission layers. The electrodes applying voltage across the device are "carrier generating" electrodes, enabling carriers to be injected into the light emission layers for recombination and subsequent emission of light. It would have been obvious to substitute known electrode material for the electrode materials of Kido as simple obvious substitution electrode material. Tsutsui discloses a "carrier generating" electrode of "mixed" organic semiconductor and metal oxide materials as efficient and useful electrode material in an organic semiconductor based device. See [0087]:

"The carrier generating electrode may be a metal thin film, a metal oxide thin film, an organic conductor thin film, an organic semiconductor film or the combination thereof. The carrier generating electrode may be provided between a negative-pole side buffer layer and a positive-pole side buffer layer. The negative-pole side buffer layer may be an inorganic dielectric thin film such as LiF and an organic thin film layer containing metal oxide such as Li oxide, alkali metal and/or alkali earth metal ion. The positive-pole side buffer layer may contain an acceptor type organic semiconductor material such as TCNQ and F4-TCNQ, an acceptor type inorganic semiconductor material such as VO.sub.x, and copper phthalocyanine. The electrode used as the carrier generating electrode may include such a buffer layer herein."

It would have been a simple and obvious electrode material substitution to practice the "mixed" organic/metal oxide electrode material of Tsutsui for electrodes in Kido. Applicant's claims are obvious structure.

### ***Response to Arguments***

Applicant's arguments filed 8/11/11 have been fully considered but they are not persuasive. The limitation "in direct contact with the first electrode" do not distinguish over the applied art for the reasons stated above, namely, because a "mixed layer" by applicant's definition is equivalent to a multilayered structure comprising metal oxide layer and organic semiconductor layer, of which Kido discloses adjacent to electrodes.

Moreover, narrowly construed "mixed layer" comprising a single layer of organic/metal oxide material is also obvious from Kido with Tsutsui, applied above.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEROME JACKSON JR whose telephone number is (571)272-1730. The examiner can normally be reached on M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jerome Jackson Jr./  
Primary Examiner, Art Unit 2815